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ABSTRACT

The ERIC Data Access System (EDAS) is an information retrieval system developed at Eastern Illinois University to access the Educational Resources Information Center (ERIC) database and make it available to Eastern faculty and students in a convenient and timely fashion. This paper describes briefly why and how Eastern developed and implemented this system, as well as how it is operated at the present time, and some future implications. (Author)

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ERIC DATA ACCESS SYSTEM (EDAS)

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The ERIC Data Access System (EDAS) is an information retrieval system developed at Eastern Illinois University. The purpose of this system is to access the Educational Resources Information Center (ERIC) database and make it available to Eastern faculty and students in a convenient and timely fashion. The intent of this paper is to describe briefly why and how Eastern developed and implemented this system as well as how it is operated at the present time and some future implications.

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

IR006995

The ERIC Data Access System (EDAS) at Eastern Illinois University is a joint project of the University's Computer Services and the Library. EDAS is administered by the Information Systems Department of the Library. The purpose of this paper is to describe why the system was developed, how it was implemented, how it is operated presently, and what benefits are provided by the system.

BACKGROUND

What is ERIC? ERIC, the Educational Resources Information Center, is operated by the National Institute of Education of the Department of Health, Education and Welfare as a service to educators throughout the country. The ERIC system was originally developed in the mid 1960's to gather and distribute significant research reports in the field of education. Since its inception, the ERIC scope has been expanded to cover many allied fields of education. Starting in 1975 ERIC shifted its emphasis from research distribution to resources distribution, giving its database a wider audience and application.

At the present time the ERIC system operates as a network consisting of its national headquarters in Washington, D.C., and sixteen clearinghouses located throughout the country. These clearinghouses, each specializing in a particular area of knowledge (for example, the ERIC Clearinghouse at the University of Oregon specializes in educational management), are responsible for the acquisition, acceptance, classification, and inclusion of reports into the ERIC system. The end products of these clearinghouses are the ERIC microfiche collection, which contains the reports accepted and evaluated by the clearinghouses, and Resources in Education (RIE), a monthly publication giving a bibliographic description and abstracts of the reports selected.

Resources in Education (published as Research in Education from 1966-1974) covers such materials as educational research reports, lesson plans, curriculum

guides, papers dealing with specific solutions to contemporary educational problems, and other documents of educational significance which are unpublished and noncopyrighted. At the present time this dataset consists of information on approximately 150,000 reports, and each month information on 1000 to 1200 reports is added to this dataset.

Another monthly publication of the ERIC system is the Current Index to Journals in Education (CIJE) which concentrates on periodical literature. At the present time it covers over 800 journals and gives bibliographic citations and abstracts of over 20,000 articles per year.

A closely related publication is Abstracts of Instructional Materials and Abstracts of Research Materials from the Center for Vocational Education at Ohio State University. This publication covers the literature of vocational and technical education. Effective in 1977 this publication was merged with the RIE.

The Thesaurus of ERIC Descriptors is a publication of the ERIC system and lists, with appropriate notes and definitions, all the descriptors (i.e. subject headings) used by the ERIC system to classify the reports and journal articles.

The above four publications are also available on magnetic tapes in a machine readable format. These tape datasets generate the main database used by the EDAS.

EASTERN'S ENVIRONMENT

Eastern Illinois University (EIU) is one of five state universities under the general jurisdiction of the Board of Governors of State Colleges and Universities. EIU is located in Charleston in east-central Illinois. At the present time it offers undergraduate and graduate programs in about 30 subject fields. It has approximately 600 faculty members and its annual

enrollment was between 8000 and 9000 during the past five years.

Booth Library is the general library for the University. Among its resources are over 700,000 microforms such as microfilm, microfiche, and microcards. Its microform files include a complete set of the ERIC microfiche collection. The Computer Services Department of the University provides the computer support for administrative, instructional, and research projects. All the administrative (and some instructional) applications are supported by the local IBM S/370-148. For most instructional and research applications, a CDC Cyber 75 is accessed through the Mid Illinois Computer Cooperative (MICC). A Data General Eclipse S/23 minicomputer acts as an interface between these two systems. Terminals to access the resources of these systems are conveniently located throughout the campus.

SYSTEM ANALYSIS

Prior to the implementation of the EDAS in the fall of 1974, search requests for the ERIC databases were sent to outside sources and the search costs were born by the Computer Services. It worked out fine as long as the number of requests were very few. As the number of requests grew, it became somewhat expensive for the Computer Center to handle the search requests in this way.

Since 1968 the Computer Services and Library had been cooperating with each other and had developed several library automation programs which gained nation-wide recognition for their sophisticated operating features. In 1973 the Library established a new department called the Information Systems Department (ISD) and entrusted the development and operation of all library automation programs to it. During the early part of 1974 the Director of Computer Services and the Head of ISD got together to explore the possibilities of developing our own in-house ERIC database search service. Several interested faculty

members were also invited to participate and express their views concerning the proposed system development. From these meetings a consensus emerged in favor of the proposed system; and the design, programming, and operational responsibilities were assigned to the ISD.

The ISD developed the detailed specifications for the system and named it the Eric Data Access System (EDAS). The ISD proceeded with the design and programming of the EDAS with the following objectives:

a. The system should use existing computer hardware.

b. All required software must be internally generated.

c. It should provide a custom-generated bibliographic list to each requestor within 24 hours.

d. It should have Boolean search logic capabilities.

e. It should generate a variety of user aids to facilitate the convenient use of the system.

f. It should provide all the search services to the people associated with EIU free of charge as long as possible.

g. The system should be flexible enough to accommodate any new user needs as they developed.

SYSTEM DESIGN

The EDAS design, naturally, was influenced by the above preset objectives. The system was originally designed to operate on a S/360-50 CPU with an OS-MFT operating system along with 800 BPI tape drives and 2314 disk drives. Since the system was not hardware dependent, it operates equally well on our present S/370-148 CPU with a VS1 operating system, 1600 BPI tape drives and 3330 disk drives. No new piece of hardware was acquired specifically for the EDAS.

File Support

There are a number of files to support the EDAS. The main files were acquired on magnetic tapes from the central ERIC processing facility in Washington, D.C., on a subscription basis. Using these tapes, a number of additional datasets were created to support the system.

a. ERIC.RESUMAST: An ISAM dataset. It contains the RIE portion of the ERIC database. It covers all the reports accessioned by the ERIC system since 1966. It is arranged in RIE accession number sequence. Each record in this dataset contains data on an ERIC report. Each field within the record is preceded by a field identification code and field length information.

b. ERIC.USEMAST: Also an ISAM dataset. It is arranged alphabetically by the descriptor names (descriptors are broader subject terms used by ERIC to classify its reports) and within each descriptor by an internally generated sequence number. A record in this dataset contains a descriptor, record sequence number for that particular descriptor, and up to 1157 report numbers represented by that descriptor in the ERIC database. This dataset functions as a broader subject index to the ERIC database.

c. ERIC.IDENMAST: Another ISAM dataset. It is arranged alphabetically by the identifier names (identifiers are narrower subject terms used by ERIC to classify its reports) and within each identifier by an internally generated sequence number. A record in this dataset contains an identifier, record sequence number for that particular identifier, and up to 1157 report numbers represented by that identifier in the ERIC database. This dataset functions as a narrower subject index to the ERIC database.

d. ERIC.CIJEMAST: This dataset organization is similar to the ERIC. RESUMAST. It contains the CIJE portion of the ERIC database and represents the periodical literature analyzed by the ERIC system since 1969.

e. CIJE.USEMAST: This dataset organization is similar to the ERIC.USEMAST. It functions as a broader subject index to the ERIC.CIJEMAST.

f. CIJE.IDENMAST: This dataset organization is similar to the ERIC.IDEN-MAST. It functions as a narrower subject index to the ERIC.CIJEMAST.

g. AIMARM.MASTER: This dataset organization is similar to the ERIC.RESU-MAST. It contains the AIM/ARM portion of the ERIC database and represents the vocational and technical education reports analyzed by the ERIC system from 1967 to 1977. Effective 1978 it was merged into the ERIC.RESUMAST.

h. AIMARM.USEMAST: This dataset organization is similar to the ERIC. USEMAST. It functions as a broader subject index to the AIMARM.MASTER.

Some of these datasets were compressed using a locally developed compression routine to save direct access storage space. The compression routine enabled us to reduce by half the direct access storage space needed for the EDAS. The records from the compressed datasets are restored as needed to their original form by an expansion routine.

Programming Support

Twenty one programs in PL/1 optimizer language were coded to support the EDAS. The load modules of these programs reside in a private library and are accessed by the system as needed. To simplify the operation of the system, about a dozen Job Control Language Cataloged Procedures were coded and stored in the operating system procedure library. In addition the EDAS uses a database compression and expansion routine developed for our other library applications. It is an assembler routine and its load module is dynamically accessed by the EDAS PL/1 load modules as needed. The core requirements of the EDAS programs range from 16K to 200K.

Implementation

The ERAS was tested and implemented in the summer of 1974. After the necessary staff training, it was made available to the LIU faculty and students in the fall of 1974. Several tutorial sessions were conducted for the faculty and students on how to use the system. A brief guide was also developed explaining what type of products the system can generate and how to request them. Within a year the system gained wide acceptance and processed close to 1000 search requests.

Operation

In order to keep the database as current as possible, all ERAS datasets are updated once every three months with the latest ERIC tapes. After each update, a backup is created for each dataset used by the ERAS.

At the present time the ERAS is operating in a batch mode. The requests, however, can be submitted in an online mode or in a batch mode. The output from the ERAS can be retrieved in an online mode using a cathode ray terminal for review, and then it can be routed to a printer; or the output can go directly to the printer.

To use the ERAS, a requestor usually discusses his needs with a librarian and fills out an ERIC database search request sheet. One of the library staff members usually submits the pertinent request data through either punched cards or a terminal. When activated, the ERAS processes the requests and routes the output either to a printer or to a terminal. All reports printed at the Computer Center are sent to the library for distribution to the appropriate requestors.

Printouts Generated by ERAS

The end product of each ERAS search request is a computer generated

printout. Each requestor has the option of choosing his printout type and sequence. Three types of printouts can be provided. The first type gives only the accession numbers and it may give up to 2000 accession numbers of reports or journal articles pertinent to a search request. The second type gives the accession numbers and bibliographic citations and it may give up to 500 citations for each request. The third type gives the accession numbers, citations, and abstracts. It may give up to 125 abstracts for each request. The printouts can also be provided in a variety of sequences. For RIE printouts there is the choice of sequence by author, title, or ED number. With CIJE there is a choice of sequence by author, title, or EJ number. GOV/RES printouts can be in sequence by author, title, or PC number. In addition to choosing the printout type and sequence, a requestor may also place a time limit on his search request by specifying the time period he is interested in. In such a case the ERIC selects only those items accessioned by the ERIC system during the specified time period.

In addition to the custom generated printouts, the ERIC also generates four printouts to facilitate the effective use of the ERIC database. They are outlined below.

a. ERIC descriptor usage frequency report: This is a complete current list of all ERIC descriptors with the number of citations for each descriptor in the RIE and CIJE segments of the ERIC database.

b. List of ED numbers without ERIC microfiche: For a variety of reasons involving copyright and other factors, some documents listed in RIE are not published in microfiche format. This report identifies all such ERIC documents. In libraries with ERIC microfiche collections, this list makes a handy reference tool enabling the librarian to identify immediately the documents that are not part of the ERIC microfiche collection.

c. [illegible] master index: This report lists all [illegible] descriptions in alphabetical order and under each description lists the ID numbers of all documents that are in the RDI portion of the [illegible] database. It is a convenient and quick road which which to locate all the [illegible] abbreviations for a given description.

d. [illegible] Identifiers list: Identifiers are terms which outline the [illegible] of [illegible] documents. They are usually names of specific people, geographical locations, trade names, and projects. This report lists all [illegible] identifiers in alphabetical order and under each identifier it lists the ID numbers of all documents that are in the RDI portion of the [illegible] database. This list allows another important way in which an [illegible] user can get an [illegible] to the [illegible] database.

[illegible]

[illegible] Development Costs

Initial database acquisition up to March, 1976	$ 725.00
Design and programming costs (3 man months)	1575.00
Program testing	700.00
Printing of special brochures and forms	1000.00
Total development costs	[illegible]

[illegible] Annual Operating Costs

Annual subscription to the [illegible] database	$ 600.00
CPU and Disuse access charge costs (3 year average)	6000.00
Supplies--punched cards, special forms, etc.	200.00
Total annual operating costs	[illegible]

In a year the [illegible] processes between 1000-2000 requests. On the average, each request processed by the [illegible] costs under $6.00. It was estimated that each request would cost a minimum of $20.00 to have it processed as a commercial service. By developing our own in-house system, we have been able to save the University about $20,000 a year. For this cost effectiveness, in 1977 the [illegible] was awarded a management improvement project award by [illegible]'s

[illegible], the [illegible] of [illegible] for [illegible] and [illegible].

The [illegible] also affords [illegible] of the costs by processing [illegible] through [illegible] which [illegible] [illegible]. A fee is charged for all off campus requests for the [illegible] projects. So far 10 other campuses have used the services from time to time.

Benefits

For the Administration

The [illegible] provides an economical service. The Administration would have to spend an additional $20,000 per year to provide the same service to faculty and students through a commercial source.

For the Faculty

By providing convenient centralized bibliographies to their respective subject fields, the [illegible] relieves faculty from the tedious and time consuming chore of manual bibliography recording. It also provides a convenient access to a vast amount of sources with which to improve teaching and research.

For the Students

In addition to saving time for the students, it provides a learning environment through which they can master the techniques of computer terminal searching.

Future Applications

Plans are underway to make the [illegible] available to other [illegible] state universities through the [illegible] Computer Cooperative [illegible] network. When this project is implemented, the various universities can submit requests to the [illegible] through the [illegible] terminals. All requests will be processed at [illegible] and the output will be routed back to the requesting terminal. At the present

time discussions are also going on to export the system for implementation on another state university campus. We are also planning on a selective dissemination of information (SDI) project which will automatically inform our faculty on a periodic basis of the latest and relevant ERIC document abstracts.

CONCLUSION

The EDAS has been operating since the fall of 1974 on the EIU campus. It proved to be an economically viable system for a medium size university. It also proved that universities with limited resources can access large databases in an economic and efficient way. The EDAS demonstrated it is capable of doing what is expected of it. With four years operational experience, it can be said that the EDAS met all its design objectives.